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BIOLOGICAL LECTURES DELIVERED AT THE MARINE BIOLOGICAL LABORATORY OF WOOD'S HOLL. Summer Sessions of 1893 and 1894. Boston: Ginn & Company. 1894 and 1895. Two volumes, pages, 242 and 287.

The Marine Biological Laboratory of Wood's Holl, Mass., which is now in the sixth year of its existence, differs from its European models and precursors in the respect that it combines the functions of a research laboratory with those of a school; being designed to supplement the work of the biological department of the American high schools and colleges, while serving at the same time as a scientific centre for original investigation. It is a co-operative organisation, depending in no way upon government or sectional aid for its support but wholly on private munificence, and drawing its means and its recruits from a large and truly national association of one hundred and thirty-one colleges, universities, seminaries, academies, schools, and laboratories. So far, the success of the institution has been highly satisfactory, as is evinced by the original work and publications of its members and students, but especially by the two volumes of biological lectures before us, delivered by the teachers and investigators of the laboratory during the years 1893 and 1894. The main work of the laboratory is devoted to the general courses in zoölogy and botany, and particularly to the technical training preparatory to investigation and to the special instruction and guidance of beginners in investigation. But in these lectures, which may be regarded in some sort as the *Proceedings* of the institution, a different side of the work is presented—that of the investigators, who undertake here to review the field, and to set forth the results, of their own special labors in succinct and general terms. The lectures deal chiefly with the *unsettled* problems of the day; but a number are also concerned with the philosophical and historical aspects of biology. Thus, under the first head we have the following large list: "The Mosaic Theory of Development," by E. B. Wilson; "The Fertilisation of the Ovum," by E. G. Conklin; "On Some Facts and Principles of Physiological Morphology," by J. Loeb; "On the Nature of Cell-Organisation," by S. Watasé; "The Inadequacy of the Cell-Theory of Development," by C. O. Whitman; "Bdellostoma Dombeyi, Lac," by Howard Ayers; "The Influence of External Conditions on Plant Life," by W. P. Wilson; and "Irrito-Contractility in Plants," by J. Muirhead Macfarlane (in the volume for 1893), and "The Differentiation of Species on the Galápagos Islands and the Origin of the Group," by G. Baur; "The Embryological Criterion of Homology," by E. B. Wilson; "Cell-Division and Development," by J. P. McMurrich; and "Origin of the Centrosome," by S. Watasé (in the volume for 1894); and under the second head such articles as the following: "Dynamics in Evolution," by J. A. Ryder (1893); "A Dynamical Hypothesis of Inheritance," by J. A. Ryder; "On the Limits of Divisibility of Living Matter," by J. Loeb; "The Hereditary Mechanism and the Search for the Unknown Factors of Evolution," by H. F. Osborn; "The Problems, Methods, and Scope of Developmental Mechanics," by W. Roux, and the highly erudite articles of Prof. C. O. Whitman on "Evolution and Epigenesis,"

"Bonnet's Theory of Evolution," and "The Palingenesis and the Germ Doctrine of Bonnet" (1894). Besides these there are descriptive and professional lectures, such as that on "The Marine Biological Stations of Europe," by Bashford Dean (1893), and one on "The Organisation of Botanical Museums for Schools, Colleges, and Universities," by J. M. Macfarlane (1894).

The citation of the foregoing titles amply suffices to mark the scope and aims of the publications of the Laboratory at Wood's Holl. They are by the foremost investigators of America and give the results of the latest thought and research in the special fields of biological science. It goes without saying that they should receive the support of a large sale, and that the work of the institution itself should be encouraged by attention and by practical financial assistance. The lectures are finely illustrated and well printed in large, clear type and on good paper. μ .

POPULAR SCIENTIFIC LECTURES. By *Ernst Mach*, Formerly Professor of Physics in the German University of Prague, now Professor of the History and Theory of Inductive Science in the University of Vienna. Chicago: The Open Court Publishing Co. 1895. Pages, 313. Price, \$1.00.

In these days of spiritual and intellectual ferment, which is percolating even into the lowest strata of society, the scientific inquirer can have no higher ethical mission than the popularisation of the results of his science. For by whatever motives the search for truth is primarily actuated, in the end its value must be measured by its bearing on our life, ideals, and destiny. "We never know anything truly," an eminent philologist has said, himself a proficient in this art, "unless we can make it as clear as daylight to the commonest understanding"; and the example of an Euler and a Lagrange has attested this truth even in that most incredible of sciences—mathematics.

The populace, then, at least such of them as have emerged from the rabble stage, have some hope. And if that hope had never been consummated by the beautiful literature which all English readers have at their command in the works of Faraday, Tyndall, Huxley, and others, it would certainly have been carried forward a goodly way to its fulfilment by the simple and pleasing discourses which Professor Mach has given us in the first and largest part of his *Popular Scientific Lectures*, now collected into a volume for the first time. The subjects treated bear such titles as "The Forms of Liquids," "The Fibres of Corti," "The Causes of Harmony," "The Velocity of Light," "Why Has Man Two Eyes?"—all questions which are peculiarly adapted for popular presentation and which show admirably the relations of the different sciences to one another and their bearing on the practical problems and business of life. All offer advantageous points of view, and not a few, for example those on "The Forms of Liquids" and "On Symmetry" are the original presentation of new and important ideas. An article on "The Fundamental Concepts of Electrostatics" presents and explains the metrical notions which have made us masters of the difficult field of electricity.